

Co-Designing Digital Wellbeing: A Dual-Systems Approach to Sustainable Short-Form Video Consumption among Young Adults.

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Abstract. Excessive social media use among young adults raises concerns about its impact on mental health and quality of life, especially with current short-form video (SFV) applications designed to encourage overuse. This study investigates design strategies based on the Dual-Systems Theory to promote mindful digital interactions and sustainable usage habits. The research explores three key questions: (1) What drives excessive SFV consumption among young adults? (2) How can design strategies informed by the Dual-Systems Theory foster healthier SFV engagement? (3) How can co-design methods create tools for regulating SFV consumption? An online survey of 54 participants aged 18–25 examined usage patterns and motivations for overuse. Insights from the survey and a literature review guided a co-design process to develop a mobile application prototype that incorporates interventions for regulating SFV use. The study offers actionable strategies and theoretical contributions to digital wellbeing, emphasising responsible design for healthier social media habits.

Keywords: Young adults wellbeing, Dual-systems theory, Co-design, Short-form video, User experience design

1 Introduction

Social media has become a central component of digital interaction, particularly among young adults aged 18–25, who represent the focus of this study and a specific group within the broader category of youth. This transitional stage, from adolescence to early adulthood, is often characterised by identity exploration, uncertainty, and distinctive digital lifestyles [1]. In recent years, short-form video (SFV) platforms, such as TikTok, Instagram Reels, and YouTube Shorts, have become one of the fastest-growing segments of the social media landscape [2]. Although SFVs provide engaging digital entertainment, prolonged use has been linked to excessive social media consumption and adverse effects on physical health, mental wellbeing, and academic or professional performance [3]. The appeal and instant gratification of these platforms can undermine users' ability to regulate their behaviour, resulting in habitual overuse [4]. Despite awareness of these consequences, young adults often struggle to reduce the time they spend on these platforms, highlighting the need for strategies that support healthier and more intentional use.

This study addresses these challenges by investigating the behavioural and cognitive factors that contribute to excessive SFV use and by developing design strategies to encourage mindful, sustainable engagement. A survey of 54 participants aged 18-25 examined their usage patterns, motivations, and challenges in managing SFV consumption. These findings, together with the literature review, revealed behavioural tendencies and contextual factors that drive overuse and provided the basis for identifying key intervention points.

The study draws on Dual-Systems Theory to inform these interventions. This cognitive framework explains behaviour through the interaction of two systems: System 1, which is automatic, impulsive, and emotionally driven, and System 2, which is deliberate, reflective, and rational [5]. Common SFV platform features, including infinite scrolling, autoplay, and personalised recommendations, strongly engage System 1 and foster habitual, emotionally gratifying behaviours that make self-regulation difficult [6]. System 2 requires cognitive effort to resist these impulses and make intentional choices, but it is often underused in these contexts. By targeting both systems, this study proposes interventions that disrupt impulsive behaviours through external cues, such as reminders and usage pauses, while strengthening reflective decision-making through goal-setting and progress-tracking tools.

We employed a co-design approach to ensure that these strategies are practical, user-centred, and aligned with real-world needs. Through iterative workshops involving five participants with varying levels of SFV platform use, the research explored user motivations, identified challenges in managing consumption, and collaboratively developed and evaluated prototype solutions. This participatory process helped refine design strategies so that they resonated with users and addressed the root causes of excessive use.

Insights from the literature review, survey, and co-design workshops culminated in a mobile application prototype incorporating strategies to promote healthier SFV usage. The target users of the application are young adults aged 18-25, consistent with the participant group involved in this study. The app includes personalised reminders, goal-setting features, and time-tracking visualisations, providing immediate interventions to curb impulsive behaviours and longer-term support for reflective decision-making. The prototype was evaluated in co-design sessions, where participants assessed its usability, functionality, and perceived effectiveness, enabling further refinement.

By integrating theoretical insights with practical design interventions, this study advances research on young adults' digital wellbeing. Its primary contribution is the proposed Sustainable Digital Engagement (SDE) framework, which extends Dual-Systems Theory into an integrated, design-oriented framework for understanding and managing excessive SFV consumption. Unlike prior research that often focuses on behavioural (System 1) or reflective (System 2) interventions separately, the SDE framework integrates both systems into a unified approach and addresses the fragmented nature of existing strategies. The study also makes a methodological contribution by demonstrating a structured process that translates theory into practice through survey research, co-design workshops, and prototype development. The SDE framework therefore offers both a theoretical foundation and a practical reference for future research and design practice in digital wellbeing contexts.

2 Background

This section adopts a narrative literature review to examine existing research on young adults' engagement with social media platforms, providing context for understanding the factors that contribute to excessive use. The review focuses on prior studies of short-form video use, excessive social media consumption, and Dual-Systems Theory, synthesising relevant research to identify key behavioural factors, psychological mechanisms, and existing intervention strategies. It also considers how Dual-Systems Theory can explain user behaviour and guide the management of excessive social media consumption. This review establishes the foundation for understanding drivers of overuse, identifying effective interventions, and informing design strategies.

2.1 Short-Form Video Consumption Among Young Adults

Young adults, typically aged 18 to 25, represent a transitional phase characterised by a shift from dependence on family and external resources toward greater independence [7]. Nelson et al. argue that this period is critical for developing sustainable health behaviours [8]. Unlike adolescents, young adults experience relatively new freedoms, prompting them to seek self-expression, explore their identities, and establish or maintain relationships [9]. As a result, social media use becomes a defining feature of emerging adulthood [9].

With the rapid growth of the internet and social media platforms, concerns about excessive social media use among young people have become increasingly prominent [10]. Social media, defined as online applications facilitating interaction, relationship maintenance, and personal branding, has become indispensable to young people's daily lives [11, 12]. However, excessive use can dominate their time, detracting from essential tasks and negatively affecting their mental health, wellbeing, and overall functioning [13]. Excessive social media use is typically characterised by an inability to control engagement, prioritising online activities over other responsibilities, and various psychological consequences [13]. These include six core components: prominence, emotional changes, tolerance, withdrawal, conflict, and relapse. Individuals with problematic social media usage may experience attention deficits, cognitive distortions, impaired social relationships, and physical discomfort [14].

Short-form video (SFV) applications, a rapidly growing segment of social media, align with young adults' fast-paced and fragmented lifestyles by offering videos that typically last 15-60 seconds [15]. Their success is driven by features such as personalised recommendation algorithms, "anytime, anywhere" accessibility, and continuous viewing. Combined with interactive features that fulfil young people's emotional needs, these affordances can further immerse users in SFV consumption [16]. Consequently, young adults are spending increasing amounts of time on these platforms.

Research has identified several factors contributing to excessive use of social media platforms. Emotional triggers such as pleasure and the fear of missing out, together with the constant availability of SFV content and the continuous scrolling

feature, create an environment that encourages habitual overuse [17]. The emotional appeal of SFV platforms plays a particularly significant role in young people's excessive engagement, offering instant gratification and temporary relief from challenges common to this life stage, such as boredom, feelings of social disconnection, and uncertainty. Platform features like personalised recommendation algorithms and "endless scrolling" mechanics further reinforce prolonged immersion, making it increasingly difficult for users to regulate their behaviour. While SFV platforms provide benefits such as entertainment and social connection, excessive use is increasingly linked to negative consequences. Problematic SFV consumption can lead to dependency and addiction, characterised by an inability to control usage behaviour [3]. Prolonged overuse has been associated with a range of psychological and physical health issues, including depression, sleep disorders, social and interpersonal challenges, and declines in academic and professional performance [18, 19, 20]. Given the critical developmental stage of young adulthood and the significant risks associated with excessive SFV use, it is essential to develop effective interventions to help young adults regulate their usage and mitigate these adverse effects.

2.2 Dual-Systems Theory and User Behaviour

The Dual-Systems model provides a conceptual framework for understanding how individuals make decisions and behaviours. According to this model, humans process cognitive tasks using two distinct systems: System 1, which is fast, automatic, and unconscious, and System 2, which is slow, controlled, and conscious. These systems often operate simultaneously but may produce conflicting outcomes [21]. System 1 relies on heuristics and intuitive responses, enabling quick decision-making, but is often influenced by emotions and external stimuli. In contrast, System 2 processes information more deliberately, focusing on rational analysis and long-term planning [22, 23].

In the context of SFV consumption, these systems frequently interact in ways that influence user behaviour. System 1 prioritises immediate gratification, leading to impulsive responses to the engaging features of SFV platforms, such as personalised algorithms and infinite scrolling. While System 2 aims to exercise self-control and consider long-term consequences such as academic performance or physical health, its influence is often weakened. The immersive design of SFV platforms consistently triggers System 1, overriding the reflective efforts of System 2 and leading to excessive engagement. An increasing body of research links Dual-Systems Theory to user health behaviours, exploring how adjustments to these systems can influence decision making and behaviour. This study adopts an integrated approach, addressing Systems 1 and 2 and their interaction to develop strategies that help young adults reduce excessive SFV use [24].

System 1 and SFV Consumption. System 1 drives automatic and impulsive behaviours by creating associations between stimuli, actions, and rewards. These associations generate expectations of dopamine release, leading to feelings of pleasure and reinforcing impulsive actions [25, 26]. For young adults, SFV viewing is largely

driven by System 1. Features like concise content, instant emotional feedback, and rapid visual impacts capture attention and trigger emotional responses, delivering immediate gratification. This gratification often results in unconscious and prolonged engagement, as users fulfil entertainment needs or escape real-life pressures without deliberate consideration.

System 1 efficiently handles simple decisions using minimal cognitive resources but is highly susceptible to environmental stimuli, biases, and emotional triggers [5]. Many health-related behaviours are shaped by responses to internal cues (e.g., attitudes and emotions), external cues (e.g., social and environmental factors), and habits. As a result, much of SFV consumption is guided by unconscious reasoning rather than reflective decision-making. Hollands, Marteau, and Fletcher's framework highlights how external stimuli activates System 1, linking behaviours to specific cues and actions. Their research emphasises the role of interventions that provide persuasive information to help users understand the consequences of their actions and make more informed choices. Similarly, research indicates that repeated presentation of information can influence users' decisions and behaviours, helping to adjust the automatic processes of System 1 [27].

The reward system plays a crucial role in modulating System 1, reinforcing behaviours through instant gratification and emotional pleasure [28]. By bypassing complex cognitive evaluations, the reward system strengthens the link between stimuli and impulsive actions. Emotional feedback and habit reinforcement further embed these behaviours, making users more likely to repeat them [29, 30].

System 2 and SFV Consumption. System 2 is responsible for rational decision-making, impulse control, and long-term planning [5]. Chen et al. emphasise that System 2 processes complex problems through careful deliberation, enabling individuals to weigh long-term benefits against short-term gratification [29]. However, in the context of SFV consumption, System 2's role is often diminished. Although users may recognise the negative consequences of excessive SFV use, they frequently struggle to implement control measures. This struggle stems from the inducing mechanisms embedded in SFV platforms, such as infinite scrolling, likes, and comments, which continuously activate System 1 and reduce the influence of System 2.

System 2 uses reflection and logical analysis to realign user behaviour with long-term goals. When individuals notice inconsistencies between their actions and objectives, System 2 encourages deliberate adjustments, helping users make more rational decisions [31]. This capacity to integrate diverse information and formulate strategic plans allows users to approach challenging tasks thoughtfully, making System 2 essential for self-regulation and behavioural change [32].

Research has explored several strategies to strengthen System 2's influence. Feedback mechanisms are among the most common interventions, providing users with clear information about the consequences of their actions. By enhancing self-reflection, these mechanisms activate System 2 and help users recognise the importance of long-term benefits, prompting behavioural adjustments. Another effective strategy is the implementation of behavioural limits or decision thresholds, such as screen time reminders or usage restrictions. These measures interrupt automatic behaviours driven by System 1, forcing users to pause and engage in rational evaluation. For instance, Turel & Qahri-Saremi indicate that explicit time limits can break the inertia of

impulsive engagement, encouraging users to reassess their choices and align their actions with broader goals [31].

Together, these interventions demonstrate the potential of activating System 2 to counteract the automatic tendencies of System 1, helping users adopt more intentional and goal-oriented behaviours.

2.3 Existing Design Solutions for Social Media Consumption

The rise of excessive social media consumption has led to the development of various design solutions aimed at helping users regulate their behaviour. Using Dual-Systems Theory as a framework, these solutions can be divided into two categories:

- **System 1-Driven Interventions:** Interventions targeting System 1 aim to disrupt automatic behaviours and create moments of reflection by modifying environmental cues or introducing friction. One common approach involves nudges and break prompts. For example, features like YouTube's "Take a Break" reminders or TikTok's screen time alerts interrupt users' engagement by prompting them to pause after a set duration. These reminders leverage external cues to disrupt the continuous activation of System 1 and encourage users to reconsider their actions [33]. Similarly, content ending signals, such as Instagram's "You're All Caught Up" feature, signal the completion of new content, reducing the perceived availability of endless material and breaking the habit loop driven by System 1. Another widely used strategy is time blocking, which imposes limits on social media use. Tools such as Stay Focused and Forest allow users to set time limits, temporarily restricting access to specific platforms when those limits are exceeded. These measures create deliberate interruptions, helping users break free from automatic scrolling behaviours [33]. Environmental restructuring has also proven effective in addressing System 1-driven behaviours. By altering app notifications, rearranging app icons, or enabling grayscale mode, users can reduce the stimuli that trigger impulsive engagement with social media [34]. These interventions work by weakening the external cues that activate System 1's automatic responses.
- **System 2-Driven Interventions:** Interventions targeting System 2 focus on enhancing self-awareness, encouraging goal-setting, and fostering behavioural adjustments through feedback and education. One prominent approach is feedback mechanisms, which provide users with detailed insights into their social media habits. For example, mobile applications track users' screen time and display usage statistics, helping users evaluate whether their behaviours align with their goals or values. By increasing awareness of consumption patterns, these tools engage System 2 and encourage users to reflect on their actions. Goal-setting and monitoring tools also support System 2 by enabling users to establish specific limits on their social media usage and track their progress. Some intervention applications integrate these features to help users stay accountable and align their daily habits with long-term objectives [32]. Educational strategies further strengthen System 2 by providing users with the knowledge and skills needed to regulate their

behaviours. Initiatives such as digital literacy programs and awareness campaigns teach users about the psychological effects of social media and offer strategies for setting boundaries. These interventions encourage users to critically assess their social media habits and make informed decisions about their usage. Another effective method for engaging System 2 is using behavioural limits and decision thresholds, such as mandatory screen time reminders or enforced timeouts. These interventions prompt users to pause and evaluate their actions, activating System 2's rational evaluation processes [31]. For instance, screen time reminders can interrupt prolonged engagement, encouraging users to reassess whether their current behaviour aligns with their broader goals.

Although existing solutions targeting System 1 and System 2 offer valuable tools for addressing excessive social media use, their isolated application often limits their effectiveness. Most existing approaches address either behavioural or cognitive mechanisms separately, with limited consideration of their interaction within a unified design framework. To address this gap, this study proposes the Sustainable Digital Engagement (SDE) framework, which integrates both behavioural and cognitive processes to support more effective and sustainable digital engagement.

2.4 A Sustainable Digital Engagement Framework

The challenges and limitations of existing solutions for managing excessive SFV consumption highlight the need for an integrated approach. System 1-targeted interventions can disrupt automatic behaviours but may fail to sustain long-term behaviour change without engaging reflective processes. Users may quickly adapt to these disruptions or bypass restrictions altogether. Conversely, System 2-focused strategies rely heavily on user motivation and cognitive effort. In the absence of complementary measures to address impulsive triggers, these approaches often struggle to combat habitual overuse effectively. Current strategies often target either System 1's automatic behaviours or System 2's reflective processes, with little emphasis on their interaction.

This lack of integration results in interventions that may disrupt impulsive behaviours temporarily but fail to foster sustained changes in user habits. To address these gaps, this study proposes the Sustainable Digital Engagement (SDE) framework, unifying System 1- and System 2-driven strategies to promote mindful and sustainable SFV consumption among young adults. By leveraging the strengths of both systems, the SDE framework provides a holistic approach to addressing overuse and fostering healthier digital habits. As shown in Figure 1, the SDE framework is built on four core principles:

- **Disrupt Automatic Patterns (System 1):** Design interventions to break habitual behaviours and reduce impulsive engagement. Strategies include nudges, content ending signals, and time blocking mechanisms that interrupt automatic responses and create opportunities for reflection.
- **Enhance Reflective Awareness (System 2):** Introduce feedback mechanisms, goal-setting tools, and educational resources to support users in making

deliberate choices. These strategies engage users' reflective capacities and help them align their actions with long-term goals.

- **Integrate Both Systems:** Combine immediate behaviour regulation with reflective interventions, creating a synergy between impulse control and sustained self-awareness to foster long-term behavioural change.
- **Personalisation:** Effective interventions should address specific usage patterns, motivations, and goals associated with excessive engagement. Integrating personalised settings into digital wellbeing tools allows users to adapt their consumption habits to meet their unique needs and circumstances. Hence, this framework highlights personalisation as a critical component in developing effective solutions to address excessive use of SFV platforms.

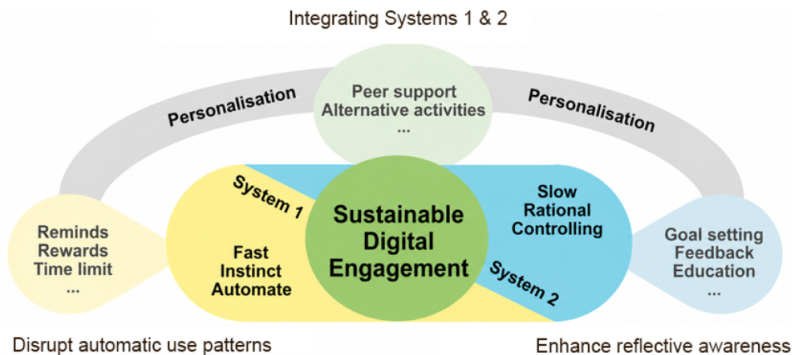


Fig. 1. A Sustainable Digital Engagement (SDE) framework.

By integrating interventions that target both systems, the SDE framework provides a comprehensive foundation for exploring design strategies that promote sustainable digital habits. By aligning these strategies with the Dual-Systems model and accounting for individual differences, the framework identifies opportunities to enhance existing approaches or develop nuanced interventions. This approach serves as a guide for creating responsible digital platforms tailored to the unique needs of young adults, ultimately supporting their digital wellbeing.

2.5 Co-design for Digital Wellbeing

Co-design has emerged as a prominent participatory design approach in human-computer interaction and digital health research, particularly for developing user-centred interventions. Unlike traditional design processes that position users primarily as evaluators, co-design involves participants as active contributors throughout problem framing, ideation, and solution development [35, 36]. This approach emphasises collaboration, shared decision-making, and the integration of users' experiential knowledge into design outcomes. In digital wellbeing contexts, co-design is valuable because young adults' interactions with digital platforms are embedded in everyday routines, emotional regulation, and social relationships. Interventions designed without sustained user involvement may therefore fail to capture these lived experiences and contextual dynamics. Co-design addresses this limitation by enabling

participants to articulate their experiences, reflect on behavioural challenges, and collaboratively explore potential solutions [37, 38].

Existing research demonstrates that co-design has been applied in various forms within digital wellbeing and youth-focused technology design, including participatory workshops, generative toolkits, collaborative ideation activities, and iterative prototyping [39, 40]. These approaches allow users not only to contribute ideas but also to actively shape design directions through continuous feedback and refinement. Through such participatory processes, co-design has been shown to enhance user engagement, improve contextual relevance, and support the development of more meaningful and acceptable interventions. However, despite its growing adoption, prior studies often provide limited detail on how co-design processes are structured and how user contributions are translated into concrete design outcomes. This lack of systematic articulation is particularly evident in research on youth digital wellbeing, where the interactions among user characteristics, platform mechanisms, and behavioural patterns are highly complex. To address this gap, this study builds on existing co-design literature and adopts a structured participatory process that integrates contextual exploration, collaborative ideation, and iterative prototyping to support the development of sustainable digital wellbeing interventions.

3 Methodology

This study adopts a structured and sequential research design, as illustrated in Fig. 2.

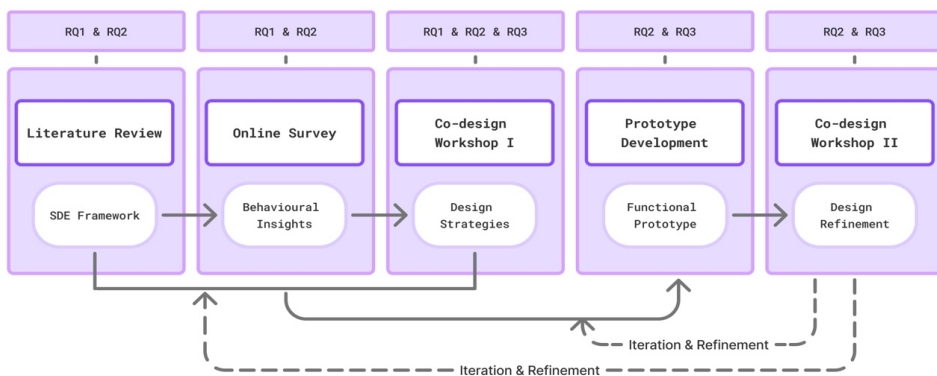


Fig. 2. Overview of the research methodology.

The process begins with a literature review to establish the theoretical foundation, followed by an online survey examining SFV usage behaviours among young adults. Insights from these stages informed Co-design Workshop I, which supported the development of design strategies and a mobile application prototype. Co-design Workshop II was then conducted to evaluate and refine the prototype. Overall, the study investigates excessive consumption of SFVs among young adults and develops design

strategies grounded in Dual-Systems Theory. The proposed SDE framework guides the investigation through the following research questions:

- (1) What drives excessive SFV consumption among young adults?
- (2) How can design strategies informed by the Dual-Systems Theory foster healthier SFV engagement?
- (3) How can co-design methods create tools for regulating SFV use?

3.1 Survey Design

To deepen understanding of young adults' engagement with SFV content and platforms, an online survey was conducted as the initial phase of the user study. This approach provided a practical way to capture a range of experiences and behaviours, generating insights into the factors that drive excessive SFV consumption. The survey explored participants' usage patterns, motivations, challenges, and strategies for managing their interaction with SFV products. The findings helped validate key assumptions from the framework and informed the subsequent co-design process, keeping the research grounded in user needs and perspectives.

The study targeted tertiary students aged 18-25, representing young adults in a transitional phase of balancing academic responsibilities and social independence. Participants were selected because of their relevance to the research focus and their high levels of engagement with digital platforms. Recruitment was conducted via social media platforms, including Facebook and online forums, to reach young adults from varied backgrounds. To confirm eligibility, the survey included two screening questions: one verifying prior or current use of SFV applications and another confirming participants' age and occupation. The survey yielded 54 valid responses for analysing usage patterns, motivations, and challenges related to SFV engagement.

Following the screening process, the survey was categorised into the following sections based on the SDE framework: SFV usage behaviour, emotional experience and needs, user goals, and personal preferences and strategies. The first section included five questions regarding the duration, frequency, and specific timeframes of participants' SFV consumption. This section provided empirical evidence for identifying the factors driving excessive SFV consumption among young adults, offering detailed insights into key behaviours and usage patterns influenced by the interplay of the dual systems. The second section explored participants' emotional and perceptual responses to SFV content through two questions. This section aimed to uncover how satisfaction and emotional engagement influenced participants' decision-making and usage behaviours, providing a nuanced understanding of the psychological factors underlying excessive use. The third section focused on participants' willingness to regulate their SFV usage and the barriers they encountered. These questions were essential for understanding participants' specific goals, needs, and challenges, offering critical insights for developing targeted strategies and interventions. The final section addressed participants' views and preferences regarding existing and

proposed strategies for managing SFV usage. The findings from this section validated the practical applicability of the proposed strategies and informed the initial development of design interventions. These insights informed the structure of the workshop activities and guided the discussion of proposed design strategies.

The online survey was conducted over approximately one month, with anonymous data collected and stored securely using the Qualtrics survey platform. Survey responses were reviewed for completeness, and incomplete or invalid entries were excluded. Quantitative data, such as SFV usage frequency and duration, were analysed using descriptive statistics to identify trends and usage patterns. Qualitative responses, including answers to open-ended questions on emotional perceptions and personal strategies, were analysed using thematic analysis to identify recurring themes and insights. Microsoft Excel was used for quantitative analysis, and NVivo was used for qualitative analysis.

In addition to supporting findings from existing literature, the survey provided context-specific and user-grounded insights into young adults' SFV consumption. It captured participants' lived experiences, including emotional triggers, usage patterns, and practical challenges in managing consumption, which are not always fully reflected in prior studies. These insights informed the subsequent co-design process and the development of design strategies, strengthening the alignment between the proposed interventions and real user needs.

3.2 Co-design

Following the survey stage, two co-design workshops were conducted. Co-design Workshop I focused on generating design strategies, while Co-design Workshop II evaluated and refined the developed prototype. Both workshops were audio-recorded and transcribed for qualitative analysis in NVivo. The coding process was guided by the proposed SDE framework and used an inductive thematic analysis approach. First, transcripts were reviewed multiple times to ensure familiarity with the data. Initial codes were generated from meaningful segments related to SFV usage behaviours, triggers, and management strategies. These codes were iteratively refined and grouped into higher-level themes through comparison and discussion. The resulting themes captured behavioural triggers of excessive SFV use and user-perceived design strategies, informing the development of design requirements and prototype features. Five co-design participants were recruited through social media (see Table 1). Recruitment targeted local participants for face-to-face co-design activities. Interested individuals indicated their SFV application usage frequency, categorised as frequent users (more than three times a day), regular users (one to three times a day), occasional users (three to six times a week), and rare users (fewer than three times a week). Based on these criteria, three frequent users and two regular users were selected.

Tab. 1. Co-design participants and their usage of SFV applications.

Participant	Age	Gender	Occupation	Usage of SFV
P1	18-25	Female	Postgraduate Student	Frequent
P2	18-25	Male	Postgraduate Student	Frequent
P3	18-25	Male	Undergraduate Student	Frequent
P4	18-25	Female	Undergraduate Student	Regular
P5	18-25	Male	Undergraduate Student	Regular

Co-design Workshop I. During the 45-minute session, group activities and discussions focused on evaluating existing strategies, understanding their effectiveness, and brainstorming new approaches based on participants' insights. Participants were presented with 10 strategy cards derived from the literature and survey findings, representing core aspects of the SDE framework. These cards represented intervention strategies for managing SFV usage and reflected key user behaviours, challenges, and preferences identified in the survey as well as strategies discussed in prior research. For example, strategies targeting System 1 included usage reminders, break reminders, and time limits. Strategies supporting System 2 included feedback mechanisms, goal-setting tools, and educational resources. Rewards and peer support were included to integrate both systems, while personalisation strategies included tailored reminders and customised activity recommendations. Blank space on each card allowed participants to propose additional strategies.

The first 15 minutes were dedicated to a card-sorting activity in which participants ranked the strategy cards according to perceived usefulness for managing SFV usage. Their criteria included perceived effectiveness in reducing excessive SFV use, ease of implementation in everyday contexts, and personal relevance to their own usage habits and challenges. The ranking process was supported by group discussion, during which participants explained their reasoning and reflected on their evaluations. Participants compared, selected, and ordered the cards into a prioritised sequence, then spent 20 minutes discussing the strengths and limitations of different strategies and suggesting modifications or additional approaches. The session concluded with a 10-minute informal conversation about SFV usage challenges and potential management strategies. The workshop results provided insights into user preferences and informed the development of the mobile application prototype.

Co-design Workshop II. Co-design Workshop II focused on evaluating the mobile application prototype developed based on the survey and Co-design Workshop I. During the 45-minute session, participants interacted with the prototype and provided feedback on its usability, functionality, and perceived effectiveness.

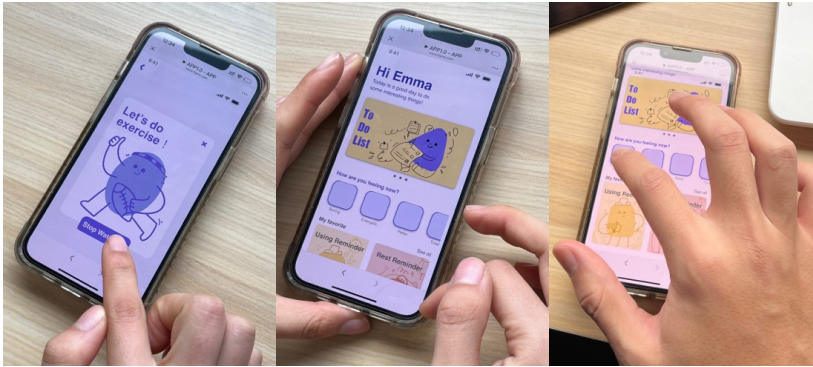


Fig. 3. Participants interacting with the mobile application prototype during the co-design workshop II.

First, participants used the mobile application prototype for 10 minutes to familiarise themselves with its core features and interface (see Figure 3). During this phase, they provided preliminary feedback on the perceived utility of the design strategies and the extent to which the features could support management of excessive SFV use. Participant feedback was collected through multiple methods, including direct interaction with the prototype, facilitated discussions with the researcher, and audio-recorded sessions. During both initial exploration and scenario-based tasks, participants provided feedback on the usability, functionality, and perceived effectiveness of the prototype. The recorded data were transcribed and analysed to identify key themes and insights. For the remainder of the session, participants were asked to envisage using SFV products in a real-life scenario (e.g., before bedtime or between classes) and then interact with the high-fidelity prototype once more. This subsequent interaction enabled a more in-depth evaluation and discussion of the prototype's effectiveness and overall usability. Beyond evaluation, feedback was documented and analysed to inform iterative refinements. Comments related to usability, interaction clarity, reminders, rewards, and personalisation settings guided subsequent adjustments to feature configuration and interaction design.

4 Survey Results

4.1 Young Adults' SFV Consumption

To improve readability, key survey findings are summarised in Table 2, highlighting usage frequency, duration, and behavioural patterns across different user groups.

Tab. 2. Summary of SFV platform usage patterns.

User Group	Usage Frequency	Session Duration	Users	Key Behaviour
Frequent	>3 times/day	Mostly >60 mins	93% current 7% previous	Highly habitual and deeply integrated into daily routines
Regular	1–3 times/day	Mostly 10–30 mins	79% current 21% previous	Moderate engagement, situational use
Occasional	3–6 times/week	Mostly <60 mins	56% current 44% previous	Opportunistic use with lower dependency

Frequency of SFV Usage: Among the 54 survey participants, 57% reported frequent use of SFV applications, 26% indicated regular use, and only 17% described their usage as occasional. No participants were identified as rare users. As shown in Table 2, 93% of frequent users are actively using SFV applications, while only 7% reported past use. In this study, “current users” refer to participants who were actively using SFV applications at the time of the survey, while “previous users” refer to those who had used SFV applications in the past but were not actively using them during the survey period. Similarly, 79% of regular users remain actively engaged, compared to 56% of occasional users, indicating a significant drop-off in current usage among less frequent users.

Duration of SFV Usage: Frequent users demonstrated higher engagement levels, with nearly half reporting session durations exceeding 60 minutes, while only 3% spent less than 10 minutes per session. Weekday usage durations were evenly distributed; however, on weekends, 47% of frequent users spent over 2 hours daily, compared with 26% who spent 1–2 hours or 30–60 minutes. These findings highlight a tendency for extended usage during leisure time. Regular users primarily engaged for 10–30 minutes per session (over half of respondents), with 29% exceeding 60 minutes. On weekdays, 50% spent 30–60 minutes daily, while 29% reported 1–2 hours of usage. Weekend patterns showed a shift, with 50% spending 1–2 hours daily, suggesting a greater allocation of time for SFV consumption on nonworking days. Occasional users showed greater variability, with 33% reporting session durations of 10–30 minutes or 30–60 minutes, while 22% spent less than 10 minutes and 11% spent more than 60 minutes per session. On weekdays, 44% spent 30–60 minutes daily, while nearly half spent less than 30 minutes on weekends. Notably, weekend usage shifted, with nearly half spending over 1 hour, suggesting occasional users' engagement may be more opportunistic.

Timing and Location: The timing and location of SFV usage varied significantly across user groups. 67% of frequent users reported using SFV applications “anytime and anywhere,” with 20% indicating late-night usage. Regular users showed similar patterns, with over half reporting flexible timing and about one-third using SFVs in the evening or late at night. Occasional users, however, displayed a distinct pattern: nearly half engaged late at night, and 33% used SFVs anytime, anywhere. These differences

suggest that frequent users incorporate SFVs more seamlessly into their routines, while occasional users may rely on them for specific, less structured periods.

Motivations for SFV Usage: Key motivations for SFV usage across frequent, regular, and occasional user groups, highlighting variations in the emphasis on relaxation, learning, socialising, and avoiding boredom as driving factors. Frequent users were primarily driven by relaxation and entertainment, with over 80% citing these as their main motivations. Additionally, 73% reported boredom as a significant trigger for usage, while 60% used SFVs before bed, during meals, or while commuting or waiting in lines. These findings highlight the role of SFVs as both a leisure activity and a coping mechanism for idle moments or emotional lows. For regular users, 70% cited relaxation and leisure as their primary motivations, with smaller proportions mentioning learning (29%) or socialising (14%). Boredom remained a common trigger, reported by 57%, while 36% used SFVs during meals or while waiting and 29% before bed. Fewer regular users reported using SFV during commutes or work/study breaks. Occasional users exhibited less dependency on SFVs for emotional regulation, with motivations primarily focused on relaxation, leisure, or socialising (over 50%). Avoiding boredom remained a significant factor, reported by 67%, while 56% engaged with SFVs before bed and 44% while waiting in line. Very few used SFVs during meals, commutes, or work/study breaks.

4.2 Young Adults' Attempts and Attitudes Towards SFV Consumption

Management Attempts: Among frequent users, approximately one-third had not attempted to manage their SFV usage and did not intend to do so. The most cited reasons were "using short video applications is just a form of entertainment, so there is no need to manage it" and "not realising the impact of short video applications." Smaller proportions mentioned "a lack of alternative entertainment or relaxation activities" and "viewing short video applications as a positive activity." On the other hand, nearly half of frequent users reported having attempted to manage their SFV usage but encountered significant challenges. The most common difficulty was "resuming use when feeling bored or stressed," followed by "difficulty resisting temptation" and "a lack of alternative activities." Additional challenges included "habitual use," "maintaining social connections," and "lack of motivation to reduce usage." These findings highlight the interplay of emotional triggers, habitual behaviours, and perceived utility in shaping SFV consumption patterns.

For regular users, 14% had not attempted to manage their usage, while 65% had made efforts to do so. Among occasional users, 11% reported no prior attempts at management, whereas 89% had previously attempted to regulate their usage. The reasons and challenges cited by regular and occasional users were broadly consistent with those of frequent users. Interestingly, the lower the frequency of usage, the more likely participants were to have attempted to manage their SFV engagement, suggesting a greater willingness among lighter users to reflect on and regulate their behaviours.

Content and Self-usage Evaluation. Participants rated their attitudes towards both SFV content and their own SFV application use (see Figure 4) on a scale from -10 to 10, where -10 indicated "extremely negative," 0 indicated neutral, and 10 indicated "extremely positive." Frequent users rated SFV content between -8 and 10, with an average score of 3.13, indicating a generally positive perception. Self-usage evaluations ranged from -7 to 10, with an average score of 3.39, slightly more favourable than the SFV content ratings. Regular users rated SFV content between -1 and 4, with an average score of 2.31, mirroring their self-reported usage evaluations. Occasional users rated SFV content between -4 and 5, with an average score of 1.14, while self-usage evaluations ranged from -3 to 4, averaging 2.29. The results suggest that higher usage frequency correlates with more positive evaluations of both SFV content and participants' usage. This trend may reflect the deeper integration of SFV consumption into the routines of frequent users, fostering a more favourable appraisal of their utility and enjoyment.

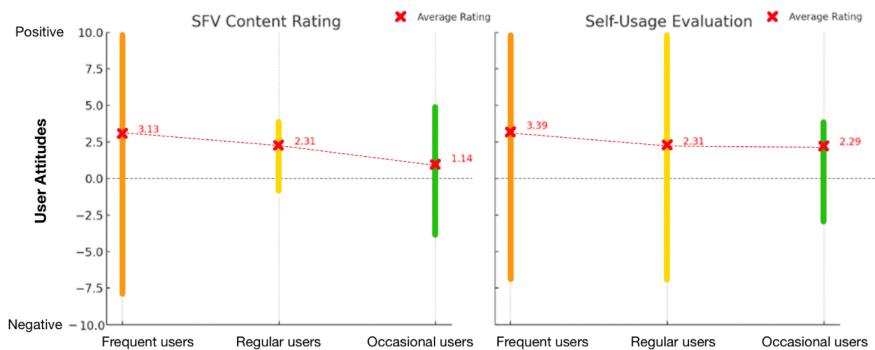


Fig. 4. Survey participants' attitudes to SFV content and self-usage by user groups.

Existing Strategies: Real-world rewards were the most frequently selected measure for managing excessive SFV usage across all user groups, followed by virtual rewards. Other commonly mentioned strategies included recommending alternative activities and restricting usage. Occasional users highlighted the usefulness of break reminders, suggesting a preference for softer intervention measures compared to more frequent users. More than half of participants across all groups expressed optimism that these measures could support the development of healthier SFV habits. Emotional support and advice were emphasised by over half of occasional users, indicating a greater need for external guidance in this group. Additionally, analysing usage patterns was valued by approximately 50% of both occasional and frequent users, demonstrating the potential of self-monitoring tools in facilitating behaviour change. Interestingly, very few participants across all groups selected "making me stop watching videos entirely" as a desired measure. This finding underscores a preference for moderation and habit-building strategies rather than complete avoidance, highlighting the importance of designing interventions that align with users' desire for balanced and sustainable engagement.

These findings highlight several key issues in young adults' SFV usage, including frequent use driven by boredom and relaxation, difficulties in resisting prolonged

engagement, and a general preference for moderation rather than complete avoidance. Based on these insights, several design implications emerge. For example, the need to address boredom suggests providing alternative activities, while difficulties in self-control indicate the importance of usage reminders and external interventions. In addition, participants' interest in rewards and tracking features highlights the potential of goal-setting and feedback mechanisms. These implications informed the development of the design requirements presented in the following section.

5 Design

Informed by the survey results and Co-design Workshop I, initial user personas of different user groups (see Figures 5 & 6) and design requirements (see Table 3) were generated for the SFV management mobile application. Survey findings on usage patterns, motivations, and management challenges were translated into requirements such as usage reminders, alternative activity recommendations, personalised goal-setting, and reward mechanisms. Co-design Workshop I further explored these strategies with target users, revealing the challenges young adults face in managing SFV consumption and the varying effectiveness of different design strategies. Together, these outputs informed the mobile prototype.

Tab. 3. Summarising findings and corresponding design requirements.

Findings	Description	Design Requirements
Boredom and Idle Moments	SFV use occurs during low-stimulation or unoccupied time.	Provide alternative activities to redirect attention during trigger moments.
Emotional Regulation Needs	SFV is used to relieve stress and improve mood.	Support emotion-aware interventions with meaningful or relaxing alternatives.
Algorithmic Immersion	Personalised recommendations sustain engagement and reduce control.	Enable environmental restructuring, e.g., limiting or disabling recommendations.
Habitual and Automatic Use	Users scroll unconsciously and lose track of time.	Provide real-time feedback and reminders to increase awareness.
Low Self-Control and Temptation	Users struggle to stop despite recognising overuse.	Implement restrictions and forced interruptions to support disengagement.
Lack of Alternative Activities	Users default to SFV due to limited alternatives.	Offer substitute activities tailored to user preferences.
Limited Effectiveness of Soft Nudges	Passive reminders are often ignored.	Combine strategies (reminders, rewards, restrictions) to improve effectiveness.
Motivation through Rewards	Some users respond to incentives.	Design reward systems (e.g., progress, achievements) to reinforce behaviour.

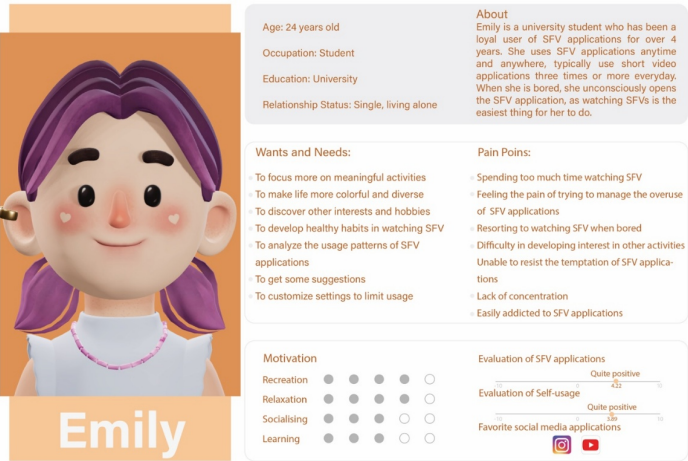


Fig. 5. User persona of frequent young adult users of SFVs

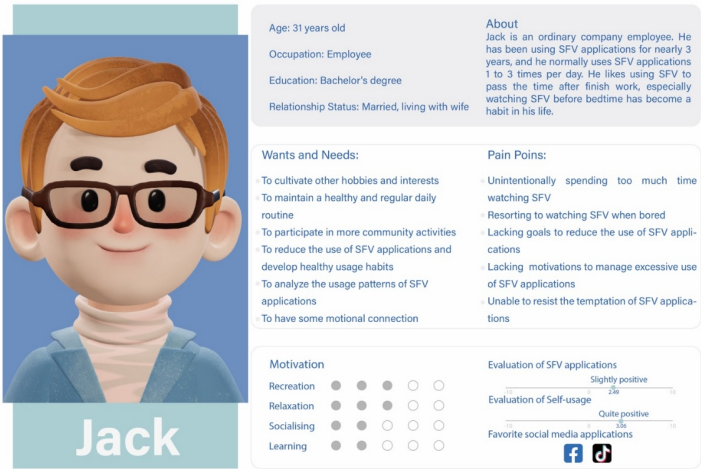


Fig. 6. User persona of regular young adult users of SFVs.

5.1 Co-Design I Ideation

Frequent users described significant difficulties controlling their SFV consumption. They identified "dependency" (P1-P2) and a "lack of self-control" (P1-P3) as major obstacles, emphasising that SFVs had become the "easiest and most convenient" (P1 and P3) form of entertainment, particularly when they were bored. This ease of access,

combined with the continuous pleasure of personalised recommendations, reinforced dependency and made stopping difficult. Frequent users also expressed frustration with the unconscious nature of their overconsumption, which they associated with platform algorithms. These observations are consistent with the behavioural triggers identified through thematic analysis (see Table 4), particularly boredom, emotional reliance, algorithmic immersion, and habitual use.

Tab. 4. Behavioural triggers of excessive SFV platform use.

Trigger	Description	Example
Boredom / Idle Moments	Low-stimulation or unoccupied time prompting SFV use	<i>"When you're waiting and feel bored, you open videos... and suddenly you've been scrolling for a long time."</i>
Emotional Regulation	SFV used to relieve stress or improve mood	<i>"When I feel stressed, I open the app... then lose control and scroll for an hour."</i>
Algorithmic Immersion	Personalised recommendations sustain engagement and reduce control	<i>"The algorithm understands me too well... I got attracted by the recommended content."</i>
Habitual / Automatic Use	Unconscious, repetitive use with loss of time awareness	<i>"I think it's been five minutes, but it's actually twenty."</i>
Low Self-Control	Difficulty disengaging despite awareness of overuse	<i>"When it reminds me, I just swipe it away... especially when I'm already immersed."</i>

Tab. 5. Key user-perceived design strategies for managing SFV platform use.

Strategy	Description	Example
Alternative Activities	Substitute activities to redirect attention during trigger moments	<i>"It helps shift attention away from the videos, you can do something else."</i>
Usage Restrictions	Limits or blocks to interrupt continuous use and break habits	<i>"If it forcibly shuts you down, you stop the urge to keep scrolling."</i>
Reward systems	Rewards to reinforce reduced use and motivate behavioural change	<i>"It gives you positive feedback... and you immediately feel a sense of achievement."</i>
Reminders	Gentle prompts to encourage stopping or reflection, often ignored	<i>"When you're already addicted, you'll definitely just turn it off."</i>
Environmental Restructuring	Reduce stimulating features (e.g., recommendations) to weaken triggers	<i>"After turning off recommendations, it gets boring... so you stop scrolling."</i>

The card-sorting activity and discussion revealed both commonalities and differences in participants' perceived effectiveness of design strategies, depending on their frequency of SFV use. All participants (P1–P5) endorsed strategies such as *recommending alternative activities*, which they found helpful in diverting attention during moments of boredom. In contrast, all participants agreed that peer support and screen time tracking were ineffective, as these approaches were perceived as either intrusive or lacking meaningful behavioural impact. These findings align with the strategy themes summarised in Table 5, where alternative activities emerged as one of the most effective approaches for addressing boredom-driven usage, while softer

interventions such as reminders and passive monitoring showed limited effectiveness in highly immersive contexts.

Interestingly, regular users (P4–P5) regarded *uninstalling SFV applications* as a direct and effective method for managing overuse, whereas all frequent users (P1–P3) expressed reluctance, feeling that moderate use did not justify such a drastic measure. In addition, frequent users found that while *usage restrictions* might help set boundaries, they often struggled with the temptation to bypass these restrictions. Although two frequent users (P1 and P3) considered *usage reminders* to be effective, others questioned their overall efficacy; during discussions, P1 and P3 admitted that they often ignored reminders when deeply engaged in SFV consumption.

The *reward systems* generated varied responses. Regular users (P4–P5) found that *real-life rewards*, such as physical badges, could be a motivating factor by providing a tangible sense of achievement. Frequent users (P1–P3) generally viewed such rewards as less compelling. Notably, while P2 showed interest in reward systems, they preferred *virtual rewards* (e.g., virtual world building or experience points) over redeemable (e.g., coffee vouchers) or real-life rewards.

During the discussion, participants also proposed new strategies on *environmental restructuring* to address triggers of excessive SFV use. *Disabling personalised recommendations* emerged as a promising approach; frequent users (P1 and P3) suggested that this measure could reduce the platform's capacity to capture their attention. P2 proposed switching to a *grayscale screen* to make SFVs less visually engaging, potentially reducing both interest and use. These user-generated suggestions further reflect the strategy themes identified in Table 5, particularly environmental restructuring and usage restriction, which aim to reduce external stimuli that trigger automatic engagement.

These insights provided a strong foundation for the design prototype. Key strategies such as recommending *alternative activities*, *usage restrictions and reminders*, and *reward systems* were prioritised, with adaptations made for different user types. Newly proposed features, including *disabling personalised recommendations* and enabling *grayscale mode*, were incorporated to better address overconsumption triggers. Overall, the integration of behavioural triggers (see Table 4) and design strategies (see Table 5) illustrates how qualitative insights from the co-design process were translated into actionable prototype decisions.

5.2 Design Prototype Development

A mobile application prototype has been developed following the insights from the survey and co-design workshop I. The application is designed for young adults aged 18–25, aligning with the participant group in this study. The design of the prototype was informed by the identified design requirements derived from the survey and co-design findings. These requirements reflect key user behaviours, motivations, and challenges, such as boredom-driven usage, difficulty in self-control, and the need for alternative activities. Based on these requirements, design strategies (e.g., usage reminders, alternative activity recommendations, goal-setting, and reward mechanisms) were incorporated into the application and translated into corresponding features. Representative user personas were also used to guide the design, ensuring that

different usage patterns and user needs were considered in the development of the prototype. This application serves not only as a tool but also as a guide, leveraging design strategies rooted in SDE framework to foster healthy digital media consumption habits. Its objectives go beyond addressing the negative impacts of SFV overuse, aiming instead to encourage users to actively pursue enriching and fulfilling activities that enhance their daily lives.

The interface adopts a relaxed and approachable design style, drawing on common characteristics of digital wellbeing applications. This is reflected in the use of soft colour palettes (e.g., light purple, yellow, and blue), rounded UI elements, and simple illustrated characters that appear across different functional screens, such as reminders, activity recommendations, and rewards.

The interface is organised in a card-based layout, with key functions presented in clearly separated sections. For example, features such as usage reminders, rest reminders, activity recommendations, and reward systems are displayed as distinct modules, allowing users to navigate between them easily. In addition, the application provides basic visual feedback through elements such as points, rewards, and simple status messages (e.g., goal completion or usage notifications), which are consistently presented across the interface. These design choices contribute to a clear and consistent interaction structure for the target user group.

Upon initial download, users are introduced to essential onboarding interfaces, including the welcome screen, account creation screen, login screen, password recovery screen, and an integration interface with SFV applications. These foundational components ensure a seamless onboarding process, establishing the essential framework for users to engage meaningfully with the application's functionalities. Users are then directed to screens for identifying their user group, configuring preferences and setting personal SFV management goals, as depicted in Figure 7. By prioritising personalisation, the application provides a tailored and supportive environment to foster effective management of SFV consumption. This emphasis on personalisation not only optimises the user experience but also contributes to achieving healthier digital engagement outcomes.

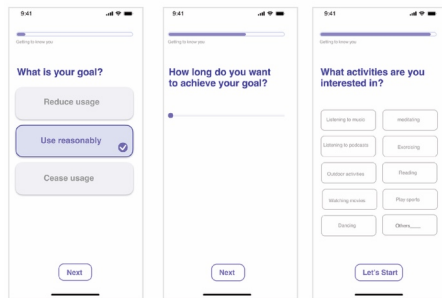


Fig. 7. Example personalisation screens during the onboarding process.

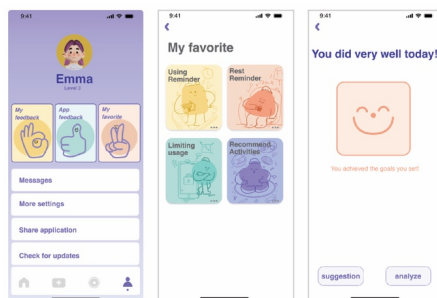


Fig. 8. Example functionality screens in the mobile prototype

Once the preference setup is complete, users gain access to the application's four main functional interfaces (see Figure 8). The home page serves as the central hub,

offering users an overview of their activity and quick access to core features. The mood exploration screen encourages users to reflect on their emotional states and provides tailored recommendations for alternative activities based on their moods. The rewards system screen offers a gamified experience that lets users track progress and earn rewards for managing their SFV usage effectively, reinforcing positive behaviour. The personal profile screen allows users to review and update their preferences, track their usage statistics, and access insights into their progress.

Incorporation of System 1 strategies. The mobile application design incorporates strategies such as break reminders, usage reminders, usage restrictions, and a reward system to leverage System 1's fast and intuitive response mechanisms. These strategies capitalise on System 1's sensitivity to environmental cues and emotional feedback, facilitating behavioural change by altering external stimuli and disrupting automatic behaviour patterns.

The application includes a customisable usage restriction system to help different user groups manage their SFV consumption. Users can set daily or weekly time limits, sending real-time reminders as the set limit approaches. Once the limit is reached, the application temporarily disables access to SFV applications, providing an immediate and effective intervention. For frequent users aiming to use more strict measures, the restriction may also change other settings (i.e., colours) of the mobile phone to further discourage digital engagement. Additionally, users can configure specific timeframes for restrictions, such as during study, work, or sleep hours, promoting healthier routines.

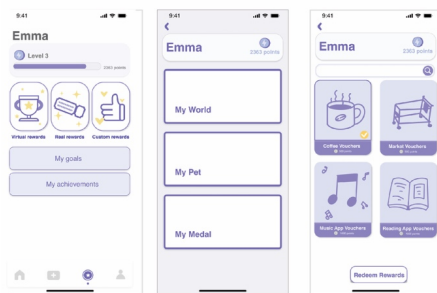


Fig. 9. Example of various SFV usage reminders in the mobile prototype.

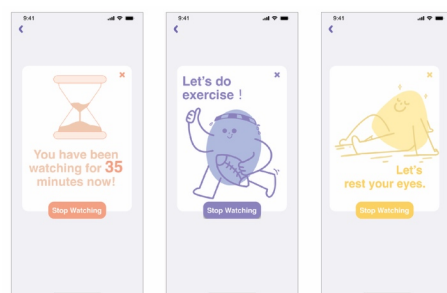


Fig. 10. Example reward system screens in the mobile prototype.

For instance, users might schedule restrictions from 10:00 PM to 7:00 AM to encourage better sleep habits. These measures operate seamlessly in the background, requiring minimal user effort and leveraging System 1's reflexive and automated nature. The prototype integrates both break and usage reminders, as shown in Figure 9. These reminders are triggered while users are watching SFV content, offering continuous and timely prompts based on user-defined preferences. For example, a break reminder might prompt pausing after a specific viewing duration, while a usage reminder might notify users of their daily limit status. These real-time interventions

disrupt habitual behaviours and encourage users to reflect on their engagement, reducing the cognitive load typically required for decision-making.

The application also incorporates a reward system to reinforce positive behaviours, as displayed in Figure 10. Users can select personalised rewards for redemption, ranging from virtual incentives, such as badges or points, to tangible real-world and redeemable rewards. Providing immediate satisfaction and emotional reinforcement, the reward system aligns with System 1's response mechanisms, motivating users to adopt healthier habits engagingly and enjoyably.

The incorporation of the above System 1 strategy collectively aids young adults in managing their SFV consumption by creating an environment that naturally guides their behaviours. By automating interventions and reducing the reliance on the cognitively demanding System 2, these measures offer a practical and accessible solution for addressing excessive SFV usage. Through subtle yet impactful changes to the external environment, the application helps users achieve sustainable behavioural improvements with minimal cognitive effort.

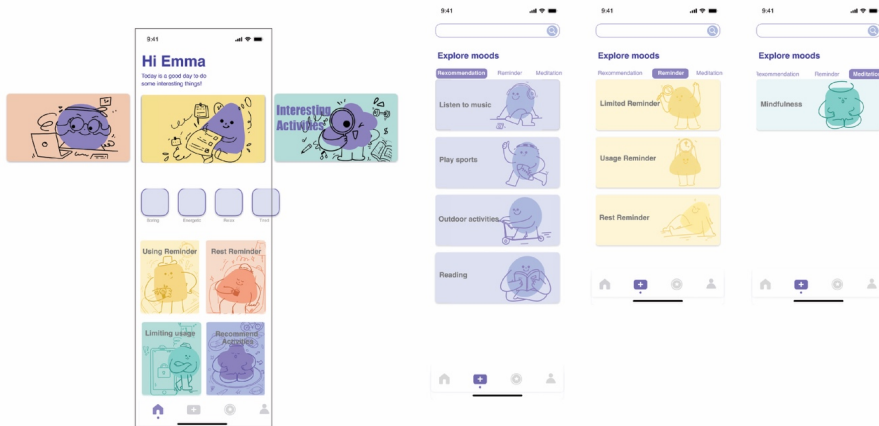
Incorporation of System 2 strategies. System 2-based measures focus on enhancing users' reflective thinking, planning, and self-control, encouraging young adults to consciously reduce excessive SFV usage. These strategies leverage System 2's deliberate and rational qualities to support healthier digital consumption habits. The mobile prototype incorporates features such as feedback and reflection systems, goal-setting functionalities, and alternative activity recommendations, enabling users to engage more thoughtfully with their usage patterns.

The application includes personalised interfaces that provide insights into users' behaviour and encourage deliberate reflection on SFV consumption. These interfaces offer system-generated feedback based on user data, including summaries of time spent, goal progress, and behavioural trends. By presenting actionable suggestions, the feedback system promotes critical evaluation of usage habits and motivates intentional change. Through this functionality, users can set daily or weekly goals, track progress, and receive real-time feedback. For instance, users aiming to reduce daily SFV use to 30 minutes can monitor performance through visualised data and adjust their habits accordingly. This feature reinforces System 2's reflective capacities, enabling alignment with long-term personal objectives.

The application also provides curated recommendations for diverse activities to reduce reliance on SFV content, as illustrated in Figure 11. These suggestions are tailored to individual preferences, including hobbies, exercise, social interactions, or learning opportunities. By presenting appealing alternatives, the feature activates System 2's focus on long-term benefits, encouraging users to shift attention toward more enriching pursuits. For example, if a user frequently consumes SFVs during breaks, the system may suggest a mindfulness exercise or a brief physical activity. This strategy diversifies daily routines and fosters a sense of purpose, helping users redirect time and energy toward healthier habits.

System 2-based features are designed to cultivate sustained behavioural change rather than relying solely on short-term interventions. By supporting reflection, goal-

setting, and exploration of alternatives, the application fosters self-regulation and intentional decision-making. These strategies work in synergy to support healthier digital habits aligned with users' personal values and aspirations. The mobile prototype demonstrates the integration of Dual-Systems Theory into practical design solutions. By focusing on System 2's reflective processes, the application promotes more deliberate engagement with digital media, supporting reduced SFV dependency and a



more balanced lifestyle.

Fig. 11. Example alternative activity screens in the mobile prototype.

5.3 Co-Design II Evaluation

The second co-design workshop evaluated the new features of the SFV management application through two tasks. Participants interacted with the application in simulated everyday scenarios and provided feedback on usability, interactivity, and perceived effectiveness. The session generated insights into how the features functioned in practice and informed iterative refinements to the prototype.

Participants responded positively to the visual design and interactive elements of the high-fidelity prototype, describing the design as intuitive and user-friendly. The reward system was perceived as useful for encouraging reduced SFV usage. For example, when participants received a usage reminder and stopped watching, the system offered immediate feedback and rewards. This external gratification strengthened the perceived value of the intervention and informed refinement of key features. These responses further assessed the perceived effectiveness of key features and informed their refinement in the design process.

Personalisation emerged as a key strength of the application. Incorporated personalisation features embedded in other features informed by both System 1 and System 2 were particularly effective in helping participants monitor and

manage their usage behaviours. Participants emphasised the importance of allowing users to explore and tailor different strategies to suit their individual needs. This feedback highlighted the importance of flexibility in personalisation and contributed to refining how such features were conceptualised within the prototype.

Overall, participants gave positive feedback on the application's functionality, visual design, and interaction process. They found the high-fidelity prototype intuitive and easy to use, particularly appreciating its clear interface and interactive elements. The reward system was perceived as effective because it provided immediate feedback when users followed usage prompts. Personalisation was also important: participants noted that adjustable features helped them manage usage behaviour more effectively. Beyond evaluation, this feedback provided direction for improving the prototype, including clarifying features, strengthening personalised usage management, and improving how emotional support is reflected in the interface. These refinements reinforce the role of Workshop II as an iterative stage in the design process.

6 Discussion

This section addresses the research questions by synthesising findings from surveys, co-design workshops, and the mobile application design to explore the factors driving excessive SFV consumption among young adults, evaluate the effectiveness of dual-systems theory based strategies, and examine how user centred design approaches can support healthier digital behaviours.

6.1 Managing SFV Consumption Among Young Adults

The findings of this research highlight the challenges posed by the convenience, instant gratification, and highly personalised recommendation algorithms of SFV applications. While these features effectively cater to users' entertainment needs, they also reinforce automated behaviours and dependency, complicating efforts to manage or reduce overuse. These findings are consistent with prior research on digital wellbeing and Dual-Systems Theory, which highlights the dominant role of System 1 in driving habitual and emotionally driven behaviours in digital environments. At the same time, they align with existing studies suggesting that System 2 supports reflective decision-making and self-regulation, although its influence is often weakened in highly immersive platform contexts.

Survey results show that most young adults engage with SFV applications more than three times daily, with over half identified as frequent users. For many, SFV provides not only entertainment but also continuous stimulation and instant gratification, making it a central part of daily life. These behaviours are driven by System 1 processes, fostering automatic, habitual engagement. Usage often increases during weekends, with SFV viewed as an effortless tool for relaxation. Personalised recommendations further amplify these tendencies, immersing users in unconscious consumption. Frequent users

exhibit strong emotional and psychological dependence, often holding positive attitudes toward both SFV applications and their usage patterns. However, this dependency creates barriers to recognising and addressing unhealthy habits, highlighting the need for external interventions to enhance awareness and motivation.

Efforts to manage SFV consumption vary across user groups. Frequent users are less likely to attempt regulation, often perceiving SFV as harmless entertainment and lacking awareness of its consequences. Among those who do attempt to limit usage, common challenges include impulsive relapses during boredom or emotional distress and difficulty identifying alternative activities. By contrast, regular and occasional users show greater initiative in managing use, reflecting lower dependency and a stronger readiness to adopt dual-system-based strategies. Occasional users engage System 2 processes more actively, demonstrating a more reflective approach and greater awareness of SFV's impact on wellbeing. Co-design participants also highlighted the convenience and accessibility of SFV as key drivers, with the platform often serving as the default response to boredom and relaxation needs. The instant gratification and emotional satisfaction reinforce System 1's automatic responses, creating a self-reinforcing cycle that is difficult to break. Personalised recommendation algorithms intensify this dynamic by amplifying System 1 activation while reducing System 2's regulatory role, reinforcing a dependency cycle that extends both the frequency and duration of use.

Therefore, addressing SFV overuse among young adults requires a dual-system approach. System 1 strategies should mitigate stimuli that trigger instant gratification and automated responses, such as limiting algorithm-driven recommendations and implementing external interruptions like reminders or usage limits. System 2 strategies should enhance users' capacity for reflection and self-regulation by incorporating feedback systems, goal-setting tools, and recommendations for alternative activities.

By addressing both behavioural inertia and cognitive control deficits in a coordinated manner, interventions can help young adults achieve a healthier balance between entertainment and self-management, fostering sustainable digital habits and overall wellbeing.

6.2 Integrating the Dual-Systems Theory

The findings underscore the potential of intervention strategies informed by the proposed Sustainable Digital Engagement (SDE) framework to mitigate excessive SFV consumption among young adults. Grounded in dual-systems theory, the SDE framework highlights essential considerations for designing effective interventions. Compared to existing approaches that typically focus on either behavioural or reflective interventions in isolation, the proposed SDE framework extends prior work by integrating System 1 and System 2 strategies within a unified, design-oriented framework. This integrated approach enables a more comprehensive way to address both impulsive behaviours and reflective regulation in managing SFV consumption.

The *alternative activity* strategy emerged as one of the most effective approaches. Frequent users consistently reported that providing alternative activity options helped redirect their attention during moments of boredom, thereby reducing their reliance on SFV. Within the SDE framework, this strategy operates on both levels of the dual-

systems theory. By providing *personalised* and actionable alternatives, it disrupts habitual engagement by offering immediate alternatives and also encourages users to evaluate the benefits of alternative activities rationally, fostering intentional and healthier behavioural pathways.

The *usage reminders* strategy, while somewhat limited in its effectiveness among frequent users, remains a key intervention tool. Participants acknowledged that timely reminders could help refocus attention and prevent prolonged immersion in SFV. This strategy aligns with System 1 by introducing external stimuli that disrupt automatic behaviours. However, for users with higher dependency, reminders alone may not suffice. Personalised and reinforced interventions are needed to further activate System 2, supporting reflective regulation and sustained behaviour change.

The *usage/time limits* strategy was regarded as particularly effective among frequent users, providing clear constraints on SFV consumption. This approach directly intervenes in System 1 by blocking immediate opportunities for habitual engagement, compelling users to pause and reassess their behaviour. However, its success hinges on System 2's ability to enforce and comply with the restrictions. Some participants noted bypassing these limits, highlighting the need for supplementary strategies, such as feedback mechanisms and personalised suggestions, to strengthen System 2's regulatory role. The *reward system*, in combination with *goal-setting*, can offer strong reinforcement of positive behaviours. While instant gratification of rewards appeals to System 1, the integration of long-term goals with feedback encourages reflective alignment with System 2.

Within the SDE framework, personalisation plays a central role in meeting diverse user needs and facilitating healthier digital consumption habits. For example, while direct and impactful for certain users, results suggest that the uninstall strategy has limited appeal among regular users. Hence, strategies to address excessive SFV use must consider the individual differences of users. Compared to existing digital wellbeing approaches, the proposed solution integrates both System 1 and System 2 strategies within a unified framework, rather than focusing on a single type of intervention. It also emphasises personalisation by adapting strategies to different user needs, motivations, and usage patterns, in contrast to more generic approaches. In addition, the solution is developed through a structured process that connects theoretical foundations, empirical insights from the survey, and co-design-driven prototype development, providing a more comprehensive and practically grounded approach to managing excessive SFV consumption.

6.3 Co-design for Young Adults Wellbeing

The co-design approach used in this study is crucial for proposing and validating design strategies to reduce excessive SFV consumption among young adults. By involving users directly in the design process, co-design ensures that the recommended strategies align with their needs, preferences, and behavioural patterns, thereby increasing the relevance and effectiveness of intervention strategies.

One of the key advantages of co-design is its ability to uncover the underlying causes and motivations behind user behaviours. Participatory discussions provide rich insights into how young adults integrate SFV consumption into their daily lives and the

challenges they face when attempting to reduce overuse. These insights often reveal subtle but critical user motivations and obstacles, enabling the development of tailored solutions. By integrating user perspectives, co-design helps create strategies that are both practical and sustainable, fostering healthier digital habits.

Furthermore, the iterative nature of co-design enables designers to test proposed solutions with users, gather actionable feedback, and refine designs to strike the right balance between providing effective guidance and maintaining user autonomy. For example, feedback on the usability and perceived effectiveness of specific strategies, such as reminders or reward systems, can inform future development and refinement of the proposed mobile application. In this study, feedback from Co-design Workshop II was used to identify areas for improvement in the prototype and informed subsequent refinements, highlighting the role of co-design as an iterative process rather than a purely evaluative step.

Another advantage of co-design is its ability to build user trust and ownership of the solution. When users feel that their opinions are valued and reflected in the design, they are more likely to adopt and adhere to the proposed strategies. This sense of ownership encourages proactive self-regulation, with users becoming more conscious of their SFV consumption and more motivated to manage it.

7 Conclusion

This study investigates the challenges of managing excessive short-form video (SFV) consumption among young adults and proposes the Sustainable Digital Engagement (SDE) framework, grounded in Dual-Systems Theory, to guide the design of effective interventions. Through survey research and co-design workshops, we identified key behavioural and cognitive drivers of overuse. The findings highlight the dominant role of System 1 in sustaining habitual and emotionally driven engagement, often undermining self-regulation, while System 2, associated with reflective and goal-oriented control, remains underutilised. This imbalance points to the need for dual-strategy interventions that both disrupt automatic behaviours and support reflective decision-making.

The developed mobile application demonstrates how System 1 and System 2 strategies can be integrated in practice. Immediate interventions, such as *reminders*, *usage limits*, and *rewards*, help interrupt habitual use, while reflective features, including *feedback*, *goal-setting*, and *alternative activity suggestions*, support longer-term behaviour change. *Personalisation* further enhances effectiveness by aligning interventions with individual motivations and usage patterns. The co-design process ensured these strategies were user-centred and contextually relevant.

This study contributes to digital wellbeing research by integrating Dual-Systems Theory with participatory design to produce both actionable strategies and a working design demonstration. The SDE framework represents the central contribution, offering an integrated structure that links behavioural theory with design implementation. Methodologically, the study demonstrates a structured approach combining survey research, co-design, and prototyping, providing a practical reference for future work. The framework also offers a scalable foundation for application across broader digital

contexts. Limitations include the small co-design sample and the focus on tertiary students in New Zealand, which may limit generalisability. Future research should involve more diverse populations and adopt longitudinal approaches to evaluate the sustained effectiveness and adaptability of the proposed strategies in evolving digital environments.

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